

**MODELING OF ASSIMILATION AND TRANSPIRATION PROCESSES
USING ARTIFICIAL NEURAL NETWORKS**

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One of the objectives of NASA's Advanced Life Support program is to develop a self-sufficient bioregenerative life support system using plants to perform several important functions. Through the process of assimilation, plants remove carbon dioxide from the atmosphere and produce oxygen while incorporating carbon into biomass (food). Fresh water is released via the process of transpiration. Assimilation and transpiration are complex, nonlinear, dynamic, and multivariable plant processes where not all relationships between various environmental conditions and input sensor parameters are well defined. Artificial neural networks with their ability to learn and approximate arbitrary nonlinear input-output relationships from a collection of examples are very suitable for characterizing these plant processes. A neural network has been developed to model assimilation and transpiration under various environmental conditions.

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Eligible for the Graduate Student Competition: No

Which categories (choose a maximum of three in ranked order), from the list below, best describe your abstract:

1. Environmental and Biological Stress
2. Metabolism or Photoregulation
3. Other

(NOTE: Gary: you might be better in selecting a category for me based on my abstract since I've never attended one of these meetings.)